CLAIMS:

1. An MR method for generating an MR image (11) of an object situated in an examination volume of an MR apparatus, which method has the following steps:

a) acquisition of a plurality of echo signals having at least two different echo-time values (t_1, t_2, t_3), the echo signals being generated from high-frequency pulses and magnetic-field gradient pulses by means of an imaging sequence,

b) reconstruction from the corresponding echo signals of one intermediate MR image (5, 6, 7) for each echo-time value (t_1, t_2, t_3),

c) determination of local relaxation times ($T_2^*(x)$) and/or local frequency shifts ($\Delta\omega(x)$) by analyzing the intermediate MR images while taking account of the respective echo-time values (t_1, t_2, t_3),

d) reconstruction of a definitive MR image (11) from the echo signals (1) in their entirety.

2. An MR method as claimed in claim 1, characterized in that, in step a) of the method, the acquisition of the echo signals takes place by non-Cartesian, and in particular radial, sampling of the spatial frequency space associated with the examination volume.

3. An MR method as claimed in claim 2, characterized in that the intermediate MR images (5, 6, 7) are reconstructed at a lower resolution than the definitive MR image (11).

4. An MR method as claimed in any of claims 1 to 3, characterized in that the imaging sequence is an echo planar imaging (EPI) sequence.

5. An MR method as claimed in any of claims 1 to 4, characterized in that the local relaxation times ($T_2^*(x)$) and/or local frequency shifts ($\Delta\omega(x)$) that are determined are used to correct image artifacts caused by relaxation phenomena and/or field inhomogeneities in the definitive MR image (11).

6. An MR method in particular as claimed in claim 5, characterized in that the values of local relaxation times (T_2*(x)) and values of local frequency shifts ($\Delta\omega(x)$) that are determined are used to correct image artifacts caused by relaxation phenomena and field inhomogeneities in an MR image (11), with a complex-variable local frequency shift ($\Delta\omega'(x)$) in accordance with the formula being used as a basis:

$$\Delta\omega'(x)=\Delta\omega(x)-\frac{i}{T_2^*(x)}.$$

7. An MR method as claimed in any of the foregoing claims, characterized in that a representation of the local relaxation times (T_2*(x)) is superimposed on a representation of the definitive MR image for the purposes of display.

8. An MR apparatus having a main field coil (12) for generating a homogeneous static magnetic field in an examination volume, a plurality of gradient coils (14, 15, 16) for generating magnetic field gradients in the examination volume, at least one high-frequency coil (19) for generating high-frequency fields in the examination volume and for receiving echo signals from the examination volume, and a central control unit (17) for operating the gradient coils (14, 15, 16) and the high-frequency coil (19), plus a reconstruction and display unit (22) for processing and showing the echo signals, characterized in that the central control unit (17) and the reconstruction and display unit (22) have a programmed control means that operates by the method claimed in any of claims 1 to 7.

9. A computer program for an MR apparatus as claimed in claim 8, characterized in that a method as claimed in any of claims 1 to 7 is implemented on the central control unit (17) and the reconstruction and display unit (22) by the computer program.